REMARKS

Claims 21-32 and 34-42 are pending in the subject application.[1] Claims 21, 39, 40, and 42 are independent. In view of both the foregoing amendments and the following remarks, favorable reconsideration and further examination are respectfully requested.

Rejections under 35 U.S.C. § 112

The Examiner rejected claim 40 under 35 U.S.C. § 112, second paragraph, as being indefinite. The Applicant has amended claim 40 and, as such, requests that the rejection be withdrawn.

Rejections under 35 U.S.C. § 102

The Examiner rejected claims 39 and 40 under 35 U.S.C. § 102(b) as being anticipated by DE10007178 (Baier).[2]

As amended, claim 39 recites, among other things, a piezoelectric substrate comprising a signal line comprising a first electrical port and a second electrical port, the first electrical port comprising an asymmetrical electrical port. In this regard, the apparatus of claim 39 allows unbalanced conversion to be performed. Baier is not understood to disclose at least this feature of claim 39.

In contrast, Baier appears to disclose a SAW HF filter with reactance elements that is suitable for mobile radio.[3] The filter is balanced on both sides, is electrically symmetric, and

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[1] The Examiner is urged to independently verify this recitation of the pending claims.
[2] Baier has a U.S. counterpart, U.S. Patent No. 6,939,781, which is referenced herein.

comprises a four-pole reactance series element, which can be formed from two two-pole pole reactance elements or from a four-pole reactance element, and a resonator.[4] That is, Baier appears to describe balanced signal filters. In this regard, Baier states "[t]he invention proposes, for the first time, to structure an HF filter that can be operated in balanced mode on both sides with reactance elements on a SAW basis."[5] Thus, as the "filter according to the invention [of Baier] is embodied to be completely electrically symmetric,"[6] claim 39 is believed to be patentable over the applied art.

Furthermore, Baier cannot reasonably be combined with any reference teaching asymmetric connections. Baier describes that asymmetric connections are known in SAW filters[7]; however, Baier goes on to disclose that "the market is increasingly demanding SAQ filters that can be operated in balanced mode on both sides"[8] and that "the object of the present invention [is] to provide filters that can be operated in balanced mode on both sides."[9] Thus, combining Baier with a reference that teaches a first electrical port comprising an asymmetrical electrical port would be contrary to the very teachings of Baier.

Independent claim 40 contains features that are similar to those described above with regard to claim 39 and is believed to be patentable for at least the same reasons.

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[3] Baier, Abstract.
[4] Id.
[5] Baier, U.S. Patent No. 6,919,781, col. 2, lines 1-3.
[6] Id., col. 2, lines 8-10.
[7] See generally, id., at Background.
[8] Id., col. 1, lines 27-29.
[9] Id., col. 1, lines 60-61.

Rejections under 35 U.S.C. § 103

The Examiner rejected claims 21-32, 34-48, and 41 under 35 U.S.C. § 103(a) as being unpatentable over JP 2001-292050 (Mita) in view of WO 03/081772 (Bauer). The Examiner also rejected claims 21-24, 26, 28, 29, 31, 32, 34, 35, 37, and 38 under 35 U.S.C. § 103(a) as being unpatentable over Mita in view of U.S. Patent No. 5,486, 800 (Davenport).

Claim 21 recites, among other things, that a "first partial filter comprises a first serial transducer and a second serial transducer in series branches of the signal line, the first serial transducer and the second serial transducer being in an acoustic path and acoustically coupled with one another." No reasonable combination of Mita, Bauer, or Davenport describes or suggests the features of claim 21

As shown in figure 11, Mita is understood to disclose a two staged SAW-filter comprising a ladder~type filter as first partial filter (137) that is connected in series to a second partial filter (a DMS-filter 135). The first partial filter (the ladder-type filter) comprises a first serial transducer, a second serial transducer, and a parallel transducer which is electrically connected between the second serial transducer and the DMS-filter of the second partial filter. Furthermore, in Mita, the first serial transducer and the second serial transducer of the first partial filter are not acoustically coupled to each other.

The Examiner concedes that Mita does not disclose that a first partial filter comprises a first serial transducer and a second serial transducer in series branches of the signal line, the first serial transducer and the second serial transducer being in an acoustic path and acoustically coupled with one another. In this regard, the Office Action states:

Mita et al. do not disclose explicitly the first serial transducer and the second serial transducer being located in an acoustic path and acoustically coupled with one another.

In an attempt to remedy this deficiency of Mita, the Examiner has cited Davenport. In this regard, the Office Action states:

> **Davenport discloses a two-series resonator and a parallel resonator ladder filter (e.g. Fig. 3, 4) with a first (302) and a second (304) serial transducer located in series branches of signal line (node 1 to 2), and are located in an acoustic path and acoustically coupled with one another (e.g. Fig 3, 4), and the first (302) and second (304) serial transducer being electrically connected in series in the signal line (node 1 to 2).**
> **At the time of the invention, it would have been obvious to use Davenport's ladder filter of two series resonator and a parallel resonator (as the first partial filter) in place of Mita et al.'s ladder filter (Mita: 137) of two series resonator and a parallel resonator. The suggestion to do so is to use Davenport's ladder filter is that Davenport's ladder filter allows same beam width and pitch making them easily manufacturable (Davenport: Col. 3 line 23-26) or having the advantage of not having to stagger the transducers to isolate them (Davenport: Col. 3 line 32-37).** [10]

In a separate combination, the Examiner also cites Bauer as curing the above-mentioned deficiency of Mita. The Examiner restates an argument from the previous Office Action, which stated:

> **Bauer et al. disclose a two-series resonator and a parallel resonator ladder filter (e.g. Fig. 1) with a first (IS1) and a second (IS2) serial transducer located in series branches of signal line (T1 to T2), and are located in an acoustic path and acoustically coupled with one another (Col. 9 line 39-62), and the first (IS1) and second (IS2) serial transducer being electrically connected in series in the signal line (from T1 to V1 to T2; Col. 9 line 39-43).**
> **At the time of the invention, it would have been obvious to use Bauer et al.'s ladder filter of two series resonator and a parallel resonator (as the first partial filter) in place of Mita et al.'s ladder filter (Mita: 137) of two series resonator and a parallel resonator. The suggestion to do so is to use Bauer et al.'s ladder filter is that Bauer et al.'s ladder filter provides less-loss and space-saving arrangement for the filter elements (Bauer: Abstract).**[11]

The Applicant respectfully submits that Mita cannot reasonably be combined with either Bauer or Davenport to describe or suggest the features of claim 21.

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[10] Office Action dated March 18, 2009, page 6.
[11] Office Action dated September 19, 2008, pages 3-4.

Both Bauer and Davenport refer to ladder-type filter with acoustically coupled serial transducers. It is an object of these documents to provide a ladder type filter with a design needing less area on a piezoelectric substrate and therefore with reduced dimensions when integrated into a filter device. As the acoustic coupling of serial transducers leads to a reduced number of reflector elements (because the coupled transducer elements themselves act as reflector elements for SAW), and as the number of acoustic tracks is reduced, the total area on the surface of the piezoelectric substrate is reduced. Neither Bauer nor Davenport disclose that the respective filters should be combined with further OMS-filters.

Bauer and Davenport refer to surface acoustic wave filters with a reduced number of reflector elements due to coupled series transducers/resonators. A primary object of the techniques disclosed in these references is to reduce the total area of the filter.[12] A further object of both techniques is to achieve low insertion loss.[13] In this regard, Davenport states:

> Hence, there is a need for an improved SAQ device that minimizes acoustic losses and provides improved filter performance, particularly with regards to insertion loss, while reducing the surface area required in order to be implemented.[14]

Because both Bauer and Davenport seek to achieve the above-mentioned objects, it would be contrary to the teachings of both Bauer and Davenport to combine these SAW filter structures in series with a DMS filter structure, such as the DMS filter structure described in Mita. That is, combining a first partial filter (with reduced aerial consumption and low insertion loss) with a second partial filter increases both the aerial consumption and insertion loss, which

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[12] See, e.g., Davenport, col. 2, lines 29-33; col. 5, lines 11-14, and lines 19-21.
[13] See, e.g., id., col. 5, lines 63-65; col. 2, lines 29-33.
[14] Id., col. 2, lines 29-33.

is contrary to the teachings of Bauer and Davenport, and would frustrate the demands of modern applications that require devices of reduced size.

Furthermore, acoustically coupling the first and the second serial transducer of the first partial filter in Mita would serve no purpose, as the filter structure shown in figure 11 already comprises acoustically coupled transducers in the DMS filter.

For the foregoing reasons, claim 21 is believed to be patentable over the applied art.

Independent claims 39, 40, and 42 contain features that are similar to those described above with regard to claim 21, and are believed to be patentable for at least the same reasons as claim 21.

Each of the dependent claims is believed to define patentable features of the invention. Each dependent claim partakes of the novelty of its corresponding independent claim, in light of the foregoing amendments, and, as such, has not been discussed specifically herein.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Please charge any additional fees, not already covered by check, or credit any overpayment, to deposit account 06-1050, referencing Attorney Docket No. 14219-0094US1.

Respectfully submitted,

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